

Navigation Portal and the Data Integration Framework

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Engineer Research and
Development Center

W. Jeff Lillycrop

Navigation Technical Director
Engineer Research and Development Center
U.S. Army Corps of Engineers

Teresa Parks

Spatial Data Branch
Operations Division, Mobile District
U.S. Army Corps of Engineers

National Dredging Meeting
12 May 2016



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Why we need the Nav Portal & Data Integration Framework

- Each year we are responsible for more data
- It costs money to create databases, tools, and best practices
- It takes numerous skill sets to efficiently manage and use data
- Data hoarding is a thing of the past
- Data is a capital asset, collect once / use many times

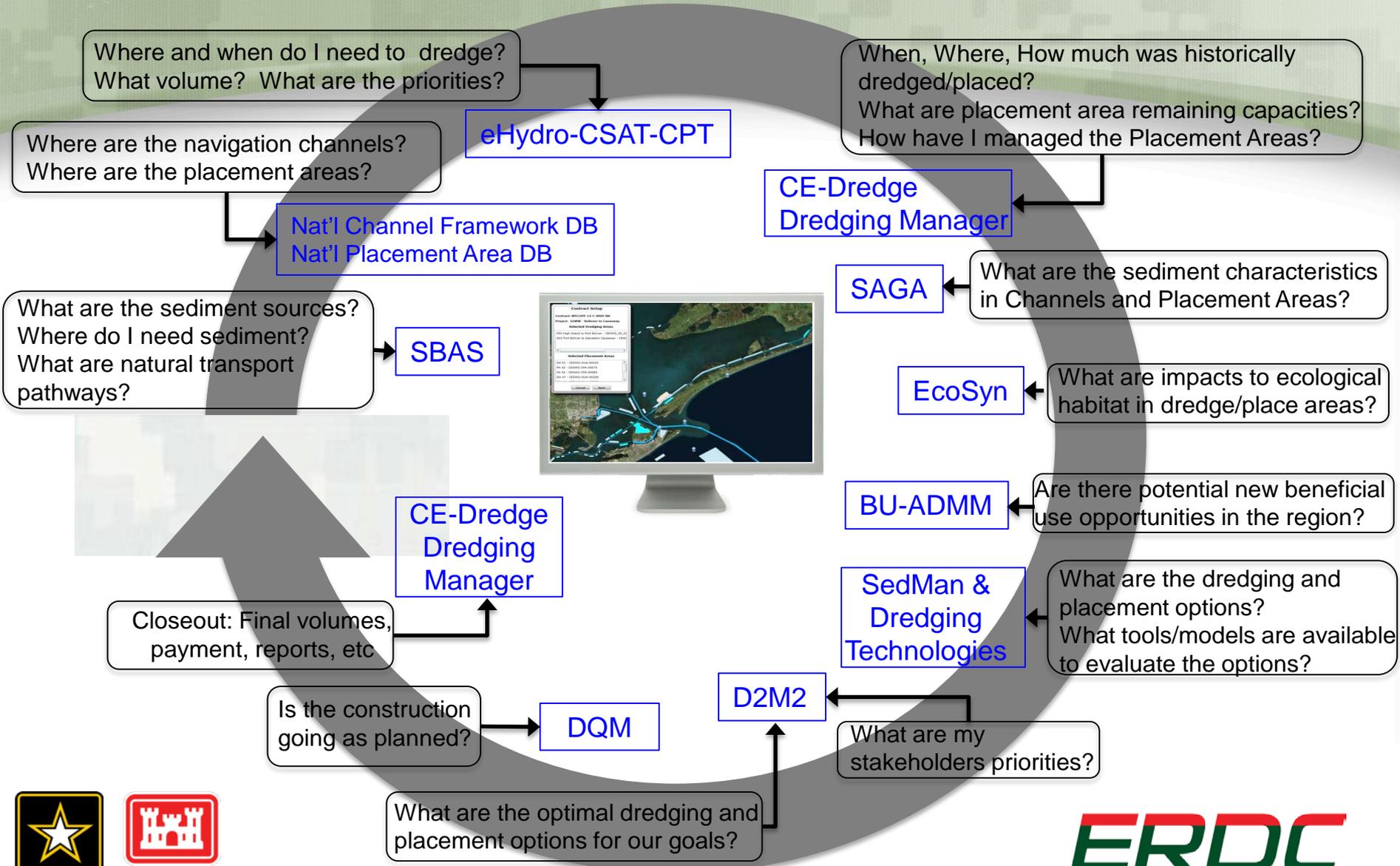


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Dredging Cycle Questions/Tools



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http://navigation.usace.army.mil

The screenshot shows a web browser window with the address bar displaying `http://sam-db02mob-dev.sam.ds.usace.army.mil:8181/DIF/Explore`. The browser's menu bar includes File, Edit, View, Favorites, Tools, and Help. The website's header features the USACE Navigation logo (US Army Corps of Engineers) and navigation links for ABOUT, EXPLORE NAVIGATION, and RESOURCE DISCOVERY. The main content area is titled "USACE Navigation Portal" and contains five informational cards, each with a right-pointing arrow:

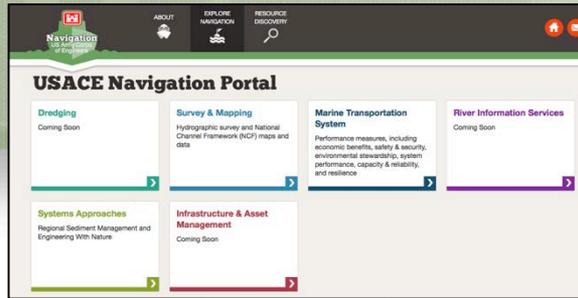
- Dredging**: Maintenance of inland, intracoastal, and coastal waterways, channels, ports, and harbors.
- Surveying & Mapping**: Hydrographic Surveying, National Channel Framework (NCF), and Inland Electronic Navigational Charts (IENC).
- Marine Transportation System**: Performance measures, including economic benefits, safety & security, environmental stewardship, system performance, capacity & reliability, and resilience.
- e-Navigation**: Harmonized navigation information resources (including lock operations and marine safety) for US inland, intracoastal, and coastal waterways and channels.
- Sediment & Ecosystem Management**: Regional Sediment Management and Engineering With Nature.
- Infrastructure & Asset Management**: Need to fill with information.



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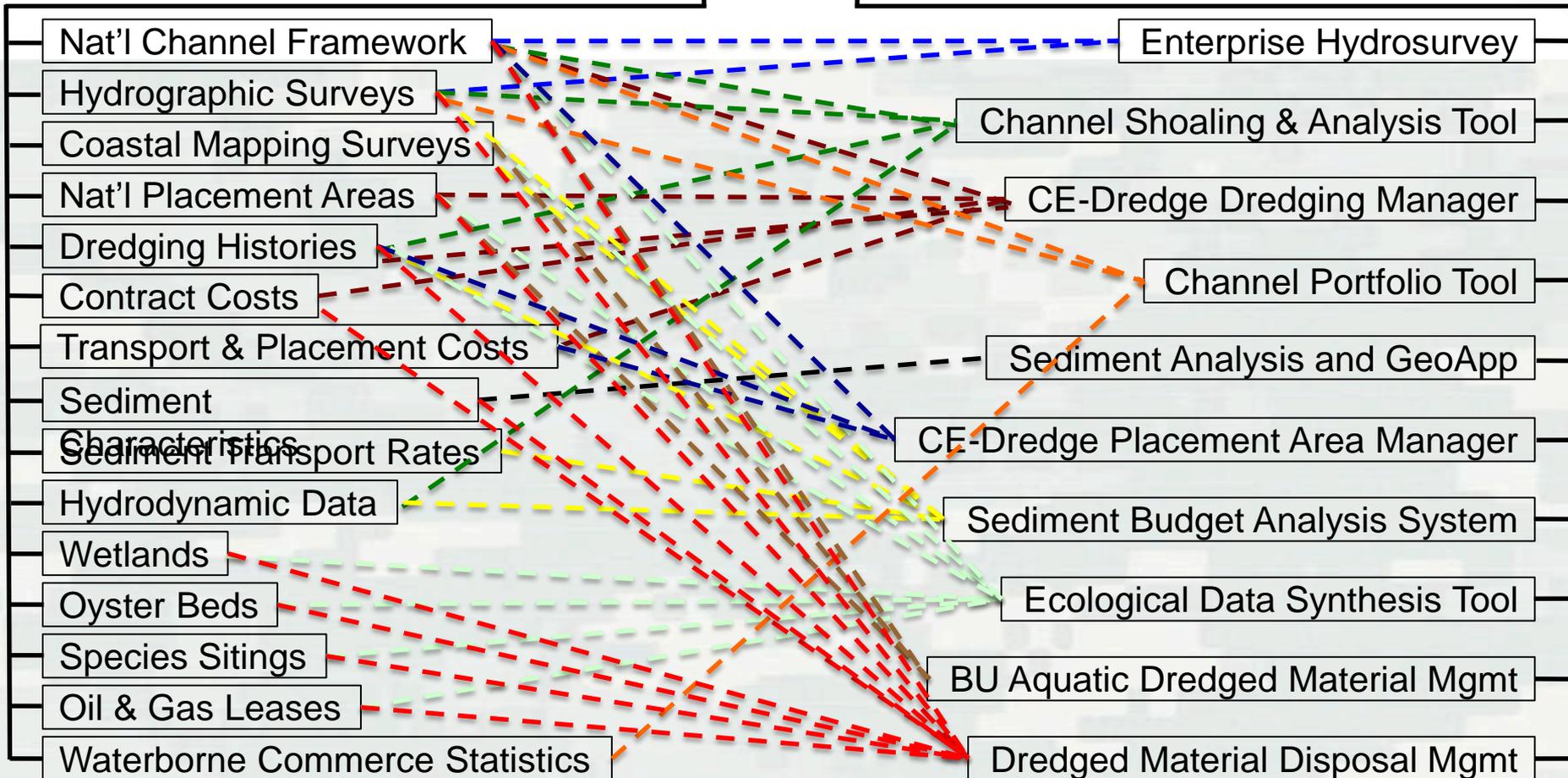
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Data

Tools



http://navigation.usace.army.mil

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Dredging

The screenshot shows a web browser window with the URL <http://sam-db02mob-dev.sam.ds.usace.army.mil:8181/CED>. The browser's address bar and menu bar are visible. The website's header is teal and contains the USACE logo, a navigation menu with links for ABOUT, PLACEMENT AREAS, CHANNELS, PERFORMANCE MEASURES, MAP, and RESOURCE DISCOVERY, and utility icons for home, email, and refresh. The main content area has a large heading "Dredging" and a "Welcome" section. The welcome text explains the USACE's role in maintaining and improving nearly 12,000 miles of shallow-draft inland and intracoastal waterways, 13,000 miles of deep-draft coastal channels, and 400 ports, harbors, and turning basins. It notes that these components are considered assets to both US commerce and national security and must be carefully managed. The text further states that only a few of these waterways are naturally deep and that channels must be excavated to a Congressionally mandated depth and then dredged periodically. A typical dredging project goes through several phases, and data is collected during each: Project planning, advertising, bidding, contract award, contractor, dredge equipment, dredging, placement, inspection, timekeeping, project completion, and payment. The website provides access to USACE dredging resources that can be used to record data, monitor dredging activities, and answer critical dredging-related questions. Below the welcome text is a "Featured Resources" section with a list of links: AISAP, Dredged Material Management Decisions (D2M2), CE-Dredge, Dredging Information System (DIS), and Dredging Quality Management (DQM).



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Dredging / Placement

The screenshot shows a web browser window with the URL <http://sam-db02mob-dev.sam.ds.usace.army.mil:8181/CED/PA>. The page title is 'Dredging'. The navigation menu includes 'ABOUT', 'PLACEMENT AREAS', 'CHANNELS', 'PERFORMANCE MEASURES', 'MAP', and 'RESOURCE DISCOVERY'. The main content area is titled 'Placement Areas' and shows a dropdown menu for 'District' set to 'CESWG'. Below the menu are buttons for 'Copy', 'Print', 'Excel', 'CSV', and 'PDF', along with a 'Show 10 entries' option and a search box. The table below lists 10 placement areas.

District	Name	Desc.	Size (acre)	Capacity Date	Total Capacity (cy)	Remaining Capacity (cy)	Pct. Remaining	Status
CESWG	PA 32	Gulf Intracoastal Waterway	34.03	12/21/2012	121,142	111,237	91.82%	Active
CESWG	PA 107	Also known as Egret Island East Matagorda Bay	124.50	No Data	No Data	0	No Data	Active
CESWG	PA 109	Also known as Dog Island Matagorda Bay	235.86	No Data	No Data	0	No Data	Active
CESWG	PA 42	Galveston Bay	201.49	12/21/2012	2,018,322	1,453,138	72.00%	Active
CESWG	PA 119	Gulf Intracoastal Waterway	641.16	No Data	No Data	0	No Data	Active
CESWG	PA 120	Gulf Intracoastal Waterway	398.45	No Data	No Data	0	No Data	Active
CESWG	PA 31	Gulf Intracoastal Waterway	32.94	12/21/2012	1	1	100.00%	Active
CESWG	PA 236	Laguna Madre	125.10	No Data	No Data	0	No Data	Active
CESWG	PA 203	Gulf Intracoastal Waterway	320.04	No Data	No Data	0	No Data	Active
CESWG	PA 165	Corpus Christi Bay	31.54	No Data	No Data	0	No Data	Active

Showing 1 to 10 of 579 entries

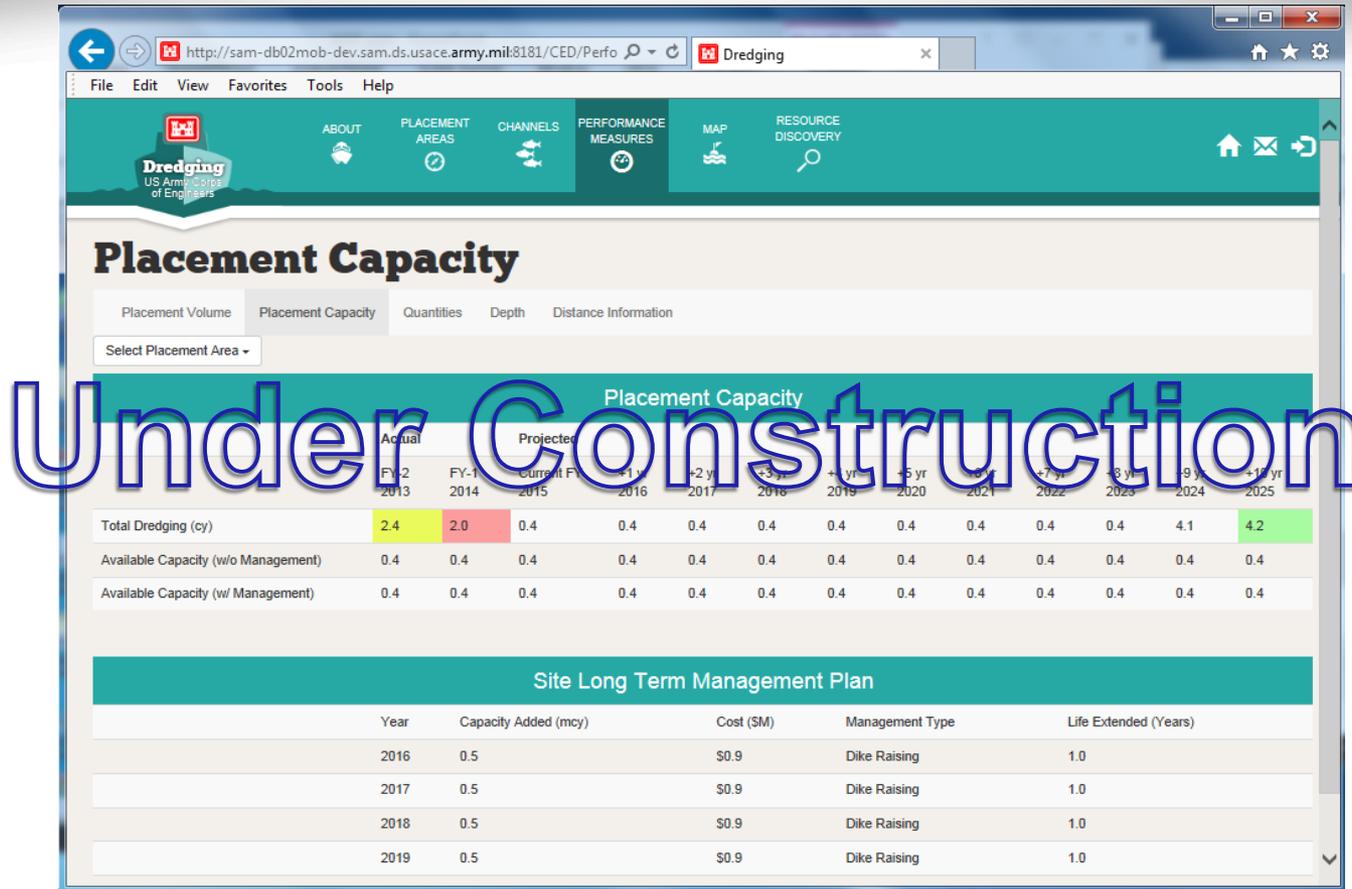


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Dredging / Capacity



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Dredging / Map

The screenshot displays a web browser window with the URL <http://sam-db02mob-dev.sam.ds.usace.army.mil:8181/CED/Map>. The browser title is "Dredging". The application interface features a teal header with navigation icons for "ABOUT", "PLACEMENT AREAS", "CHANNELS", "PERFORMANCE MEASURES", "MAP", and "RESOURCE DISCOVERY". Below the header, the "Map" section is active, showing a map of the Gulf Coast of Texas. A legend on the left lists various data layers under "National" and "Sediment" categories. The "National" category is expanded, showing a list of layers with checkboxes. The map displays blue lines representing channels and various data layers overlaid on a light gray map background. Labels on the map include Houston, Pasadena, Baytown, Pearland, League City, Texas City, Galveston, and Angleton.

Map

National - Environment - Planning -

- National
 - eHydro Bathymetry
 - LIDAR Data
 - National Channel Framework
 - National Wildlife Refuges
 - Nautical Charts
 - Placement Areas
 - Seagrasses
 - Sediment Data (SAGA)
 - Shoaling Rates (CSAT)
 - Waterborne Commerce
 - Wetlands
- Sediment

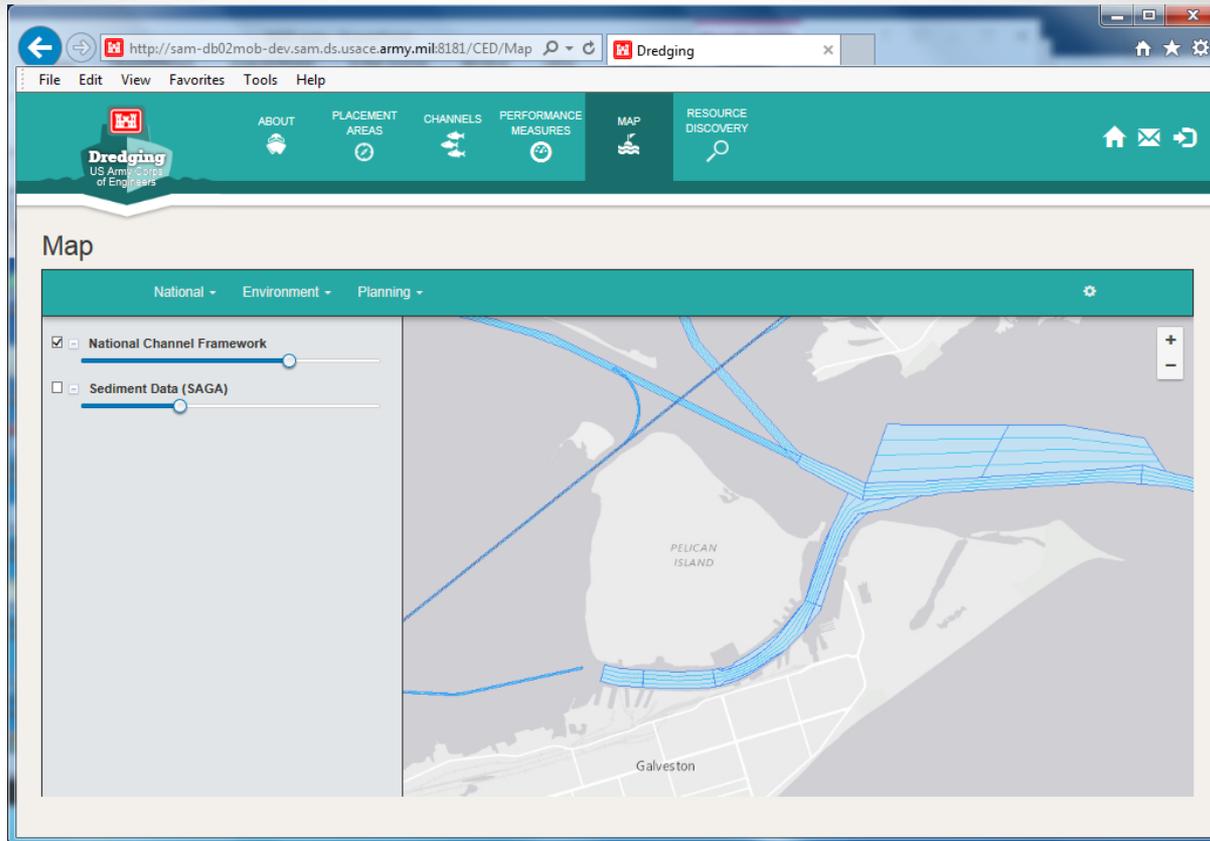


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Dredging / Map



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Dredging / Web Services

The screenshot shows a web browser window with the URL `http://sam-db02mob-dev.sam.ds.usace.army.mil:8181/CED/Disco`. The browser's address bar and menu bar are visible. The application's header is teal and contains the 'Dredging US Army Corps of Engineers' logo on the left and navigation links for 'ABOUT', 'PLACEMENT AREAS', 'CHANNELS', 'PERFORMANCE MEASURES', 'MAP', and 'RESOURCE DISCOVERY' on the right. The main content area is titled 'Resource Discovery' and features a search interface with a 'Keywords' input field, a 'Category' dropdown menu (set to 'All Categories'), and a search button. Below the search bar, a pagination bar indicates '19 Results - Displaying Result 1 to 10'. Two search results are displayed: 'National Channel Framework (Feature Service)' with a world map icon and a description of the NCF as an eGIS database, and 'Regional Process and Analysis Tool (RPAT) Desktop Tools' with a colorful map icon and a description of the RPAT tool for modeling sediment budgets.



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http://navigation.usace.army.mil

Navigation
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ABOUT EXPLORE NAVIGATION RESOURCE DISCOVERY

USACE Navigation Portal

Dredging
Maintenance of inland, intracoastal, and coastal waterways, channels, ports, and harbors

Surveying & Mapping
Hydrographic Surveying, National Channel Framework (NCF), and Inland Electronic Navigational Charts (IENC)

Marine Transportation System
Performance measures, including economic benefits, safety & security, environmental stewardship, system performance, capacity & reliability, and resilience

e-Navigation
Harmonized navigation information resources (including lock operations and marine safety) for US inland, intracoastal, and coastal waterways and channels

Sediment & Ecosystem Management
Regional Sediment Management and Engineering With Nature

Infrastructure & Asset Management
Need to fill with information

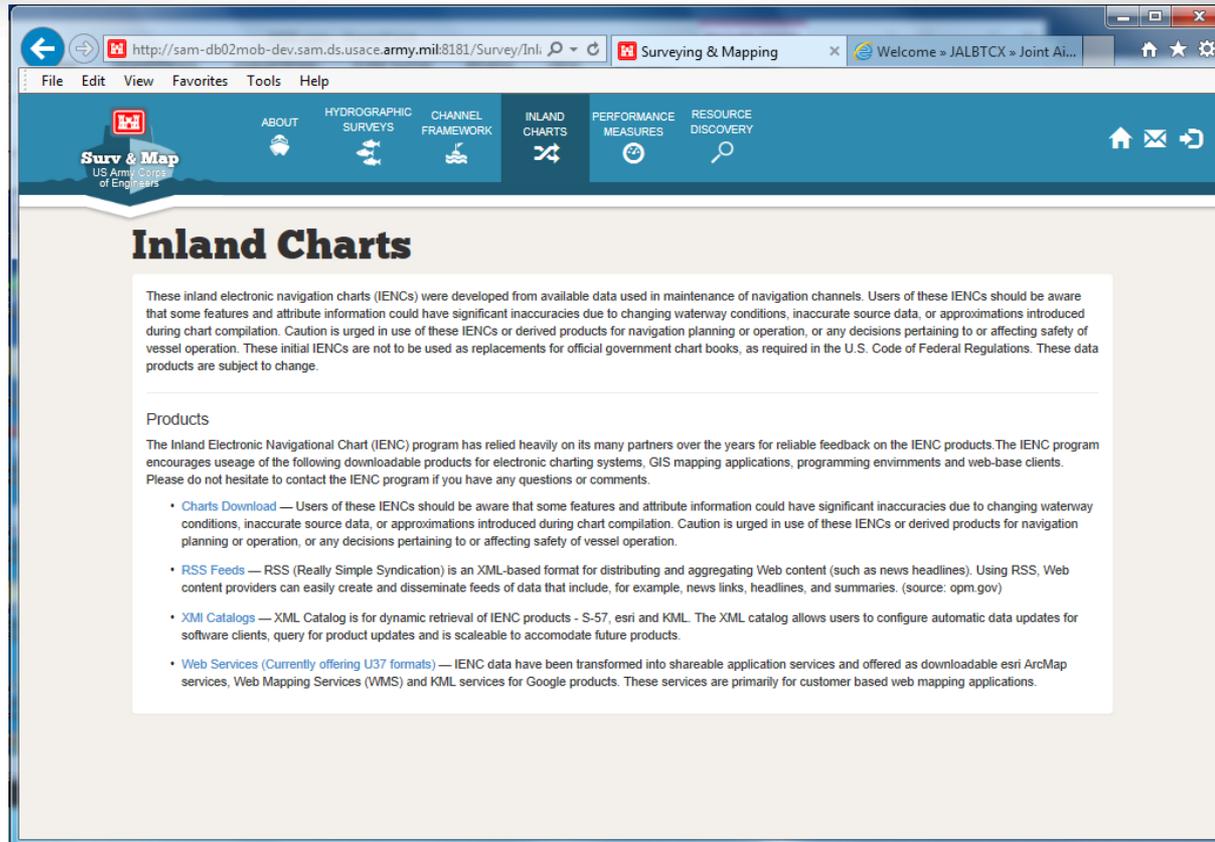


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Surveying & Mapping



The screenshot shows a web browser window with the URL <http://sam-db02mob-dev.sam.ds.usace.army.mil:8181/Survey/Inl>. The page title is "Surveying & Mapping". The browser's address bar shows the URL and the page title. The browser's menu bar includes File, Edit, View, Favorites, Tools, and Help. The page header features the "Surv & Map US Army Corps of Engineers" logo and navigation links for ABOUT, HYDROGRAPHIC SURVEYS, CHANNEL FRAMEWORK, INLAND CHARTS, PERFORMANCE MEASURES, and RESOURCE DISCOVERY. The main content area is titled "Inland Charts" and contains the following text:

These inland electronic navigation charts (IENCs) were developed from available data used in maintenance of navigation channels. Users of these IENCs should be aware that some features and attribute information could have significant inaccuracies due to changing waterway conditions, inaccurate source data, or approximations introduced during chart compilation. Caution is urged in use of these IENCs or derived products for navigation planning or operation, or any decisions pertaining to or affecting safety of vessel operation. These initial IENCs are not to be used as replacements for official government chart books, as required in the U.S. Code of Federal Regulations. These data products are subject to change.

Products

The Inland Electronic Navigational Chart (IENC) program has relied heavily on its many partners over the years for reliable feedback on the IENC products. The IENC program encourages usage of the following downloadable products for electronic charting systems, GIS mapping applications, programming environments and web-base clients. Please do not hesitate to contact the IENC program if you have any questions or comments.

- **Charts Download** — Users of these IENCs should be aware that some features and attribute information could have significant inaccuracies due to changing waterway conditions, inaccurate source data, or approximations introduced during chart compilation. Caution is urged in use of these IENCs or derived products for navigation planning or operation, or any decisions pertaining to or affecting safety of vessel operation.
- **RSS Feeds** — RSS (Really Simple Syndication) is an XML-based format for distributing and aggregating Web content (such as news headlines). Using RSS, Web content providers can easily create and disseminate feeds of data that include, for example, news links, headlines, and summaries. (source: opm.gov)
- **XML Catalogs** — XML Catalog is for dynamic retrieval of IENC products - S-57, esri and KML. The XML catalog allows users to configure automatic data updates for software clients, query for product updates and is scalable to accommodate future products.
- **Web Services (Currently offering U37 formats)** — IENC data have been transformed into shareable application services and offered as downloadable esri ArcMap services, Web Mapping Services (WMS) and KML services for Google products. These services are primarily for customer based web mapping applications.



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IENC Amazon Cloud

The screenshot shows a web browser window displaying the IENC Amazon Cloud website. The browser's address bar shows the URL: <http://ec2-54-235-76-27.compute-1.amazonaws.com/ienc/web/n>. The website header includes the text "INLAND ELECTRONIC NAVIGATIONAL CHARTS" and the "US Army Corps of Engineers" logo. A navigation menu contains links for "ABOUT", "BUSINESS WITH US", "MISSIONS", "LOCATIONS", "CAREERS", "MEDIA", "LIBRARY", and "CONTACT". Below the header, there are buttons for "Home" and "Products". The main content area is titled "Charts Download" and features a sidebar with a "Charts" menu containing options for "S57", "SHP", "KML", "Buoys", "Overlays", and "Special". The main text explains that the page provides Inland ENC 2.3 standard data (S-57) and additional GIS formats for download. It includes three sub-sections: "S57 Format" (describing IHO S-57 format for mariners), "SHP Format" (describing Shapefile format for GIS), and "KML Format" (describing KML/Keyhole Markup Language). Each sub-section is accompanied by a small thumbnail image of a chart or map.



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http://navigation.usace.army.mil

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Asset Management / Channels

The screenshot shows a web browser window displaying the Infrastructure & Asset Management (IAM) website. The browser's address bar shows the URL: <http://sam-db02mob-dev.sam.ds.usace.army.mil:8181/IAM>. The website has a dark red header with the IAM logo (US Army Corps of Engineers) on the left and navigation links for 'ABOUT', 'COASTAL STRUCTURES', and 'RESOURCE DISCOVERY' in the center. On the right side of the header are icons for home, email, and refresh. The main content area features a large heading 'Infrastructure & Asset Management' followed by a 'Welcome' section. The welcome text states: 'The U.S. Army Corps of Engineers maintains hundreds of deep-draft coastal ports and waterways as part of its navigation mission to support maritime commerce, multimodal freight supply chains, and national security. These dredged navigation channels are considered assets in terms of the value they bring to the overall navigation portfolio of projects as well as the costs of regular maintenance dredging required to keep the channels at sufficient depths to enable cost-effective marine transportation. Comparing the cargo tonnage utilizing the deepest, shoal-vulnerable channel depths to the dredging costs required to maintain those corresponding depths enables a quantitative approach to assessing these assets.' Below this is a section titled 'The purpose of this website is to do several things:' followed by a bulleted list of objectives. At the bottom, there is a 'Featured Resources' section with a link to the 'Channel Portfolio Tool (CPT)'. The browser window also shows two open tabs: 'Infrastructure & Asset Man...' and 'CPT'.

http://sam-db02mob-dev.sam.ds.usace.army.mil:8181/IAM

Infrastructure & Asset Man... CPT

File Edit View Favorites Tools Help

ABOUT COASTAL STRUCTURES RESOURCE DISCOVERY

Infrastructure & Asset Management

Welcome

The U.S. Army Corps of Engineers maintains hundreds of deep-draft coastal ports and waterways as part of its navigation mission to support maritime commerce, multimodal freight supply chains, and national security. These dredged navigation channels are considered assets in terms of the value they bring to the overall navigation portfolio of projects as well as the costs of regular maintenance dredging required to keep the channels at sufficient depths to enable cost-effective marine transportation. Comparing the cargo tonnage utilizing the deepest, shoal-vulnerable channel depths to the dredging costs required to maintain those corresponding depths enables a quantitative approach to assessing these assets.

The purpose of this website is to do several things:

- Capitalize on eGIS capabilities to provide a national database structure for access to dredging information and data relevant to analysis of dredging operations
- Provide standardized applications to improve the planning and management of projects
- Improve the means for forecasting budgets and schedules in addition to future volumes, capacities, and needs for dredging and disposal facilities
- Improve environmental analysis capabilities relevant to dredging operations: delineate sea grass beds, bird islands, and marsh creation areas, and enhance environmental compliance monitoring and assessments
- Facilitate capture and maintenance of institutional knowledge in a database
- Reduce duplication of manual data entry
- Provide the ability to respond to data requests quickly

Featured Resources

- [Channel Portfolio Tool \(CPT\)](#) — A web-based decision-support package for determining the extent to which Corps-maintained navigation channel depths are utilized by commercial shipping.



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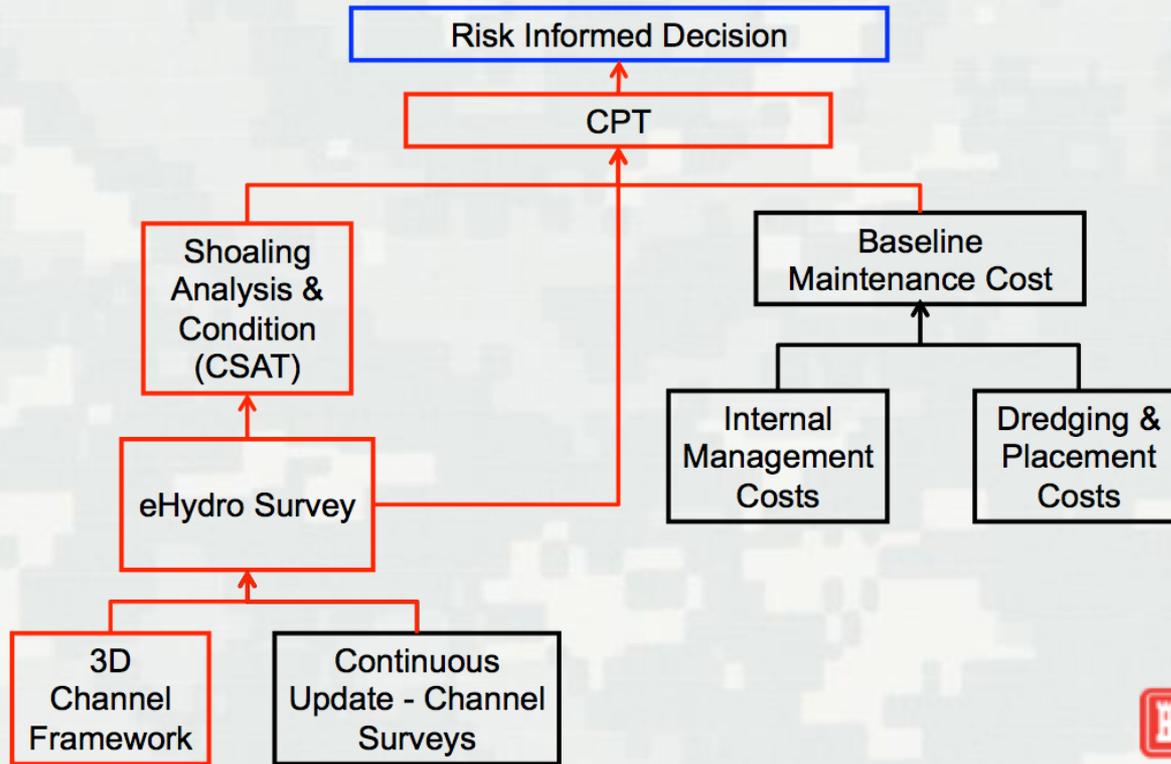
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Navigation Channels

eHydro Application and Reporting Process

Condition Plots HQ Channel Indices NOAA Reports Metadata

AM Nav Channel Work Flow



Channel

ization profiles
argo across the
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NWP -

Targ
Elev

31	7.270	10.905	14.467	14.660	7.740	3.994	2.549
30	5.982	8.973	11.926	12.968	7.729	3.946	2.440
29	4.629	6.944	9.245	10.850	7.605	3.819	2.257
28	3.869	5.603	7.731	9.281	7.321	3.842	2.219
27	3.341	5.011	6.680	8.209	7.453	4.166	2.326
26	2.792	4.188	5.583	6.899	6.754	4.137	2.303
25	2.317	3.475	4.833	5.757	6.121	4.230	2.345
24	1.991	2.942	3.922	4.883	5.382	4.091	2.359
23	1.579	2.369	3.158	3.939	4.507	3.842	2.340
22	1.355	2.033	2.711	3.383	3.925	3.597	2.360
21	1.206	1.810	2.413	3.014	3.545	3.522	2.547
20	1.000	1.500	2.000	2.499	2.955	3.066	2.405



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http://navigation.usace.army.mil

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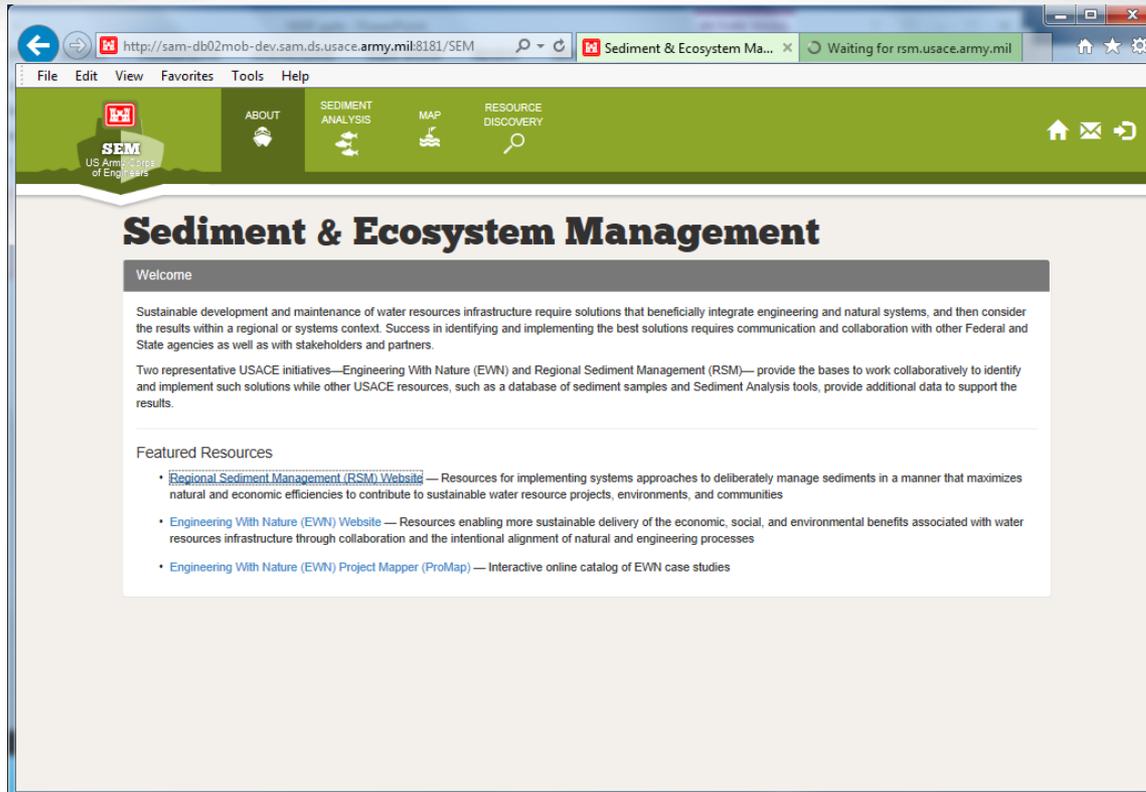


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Dredging Management Tools

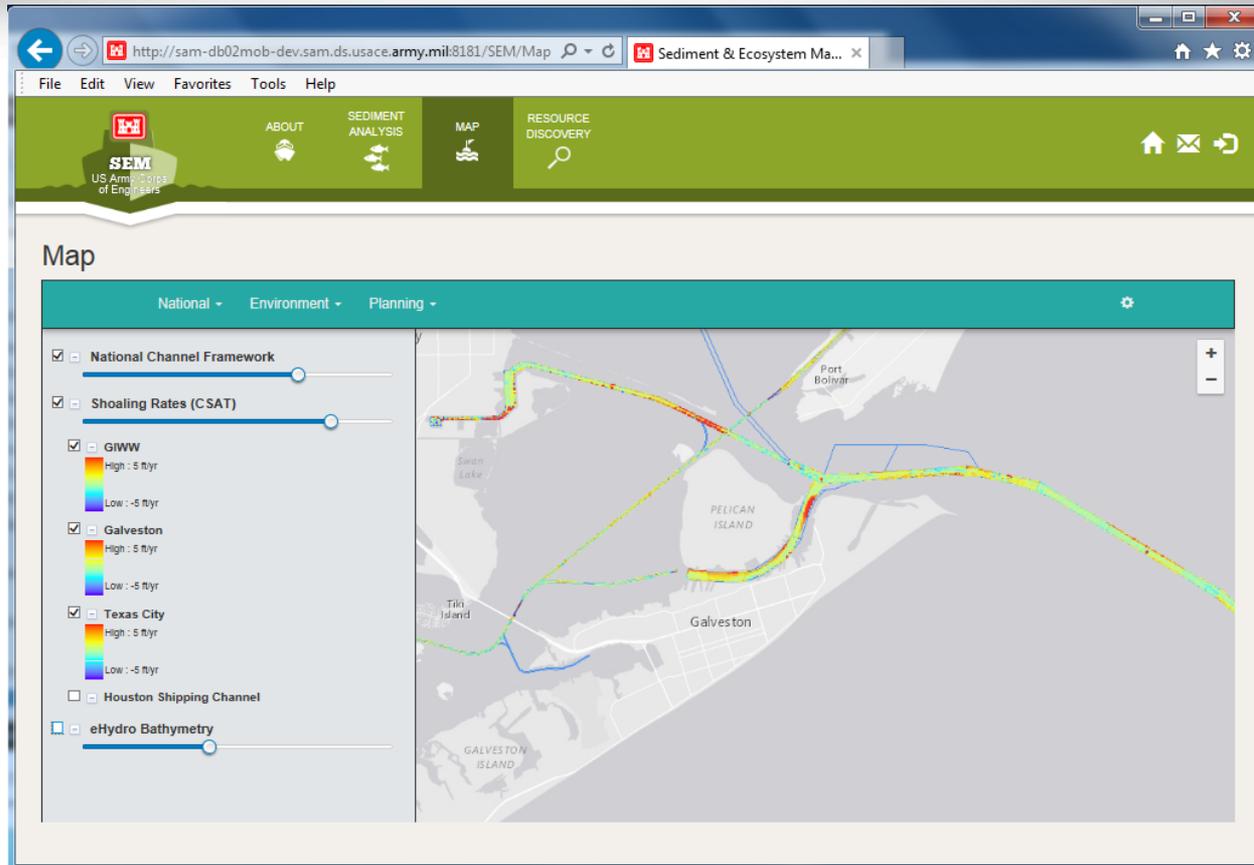


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Channel Shoaling

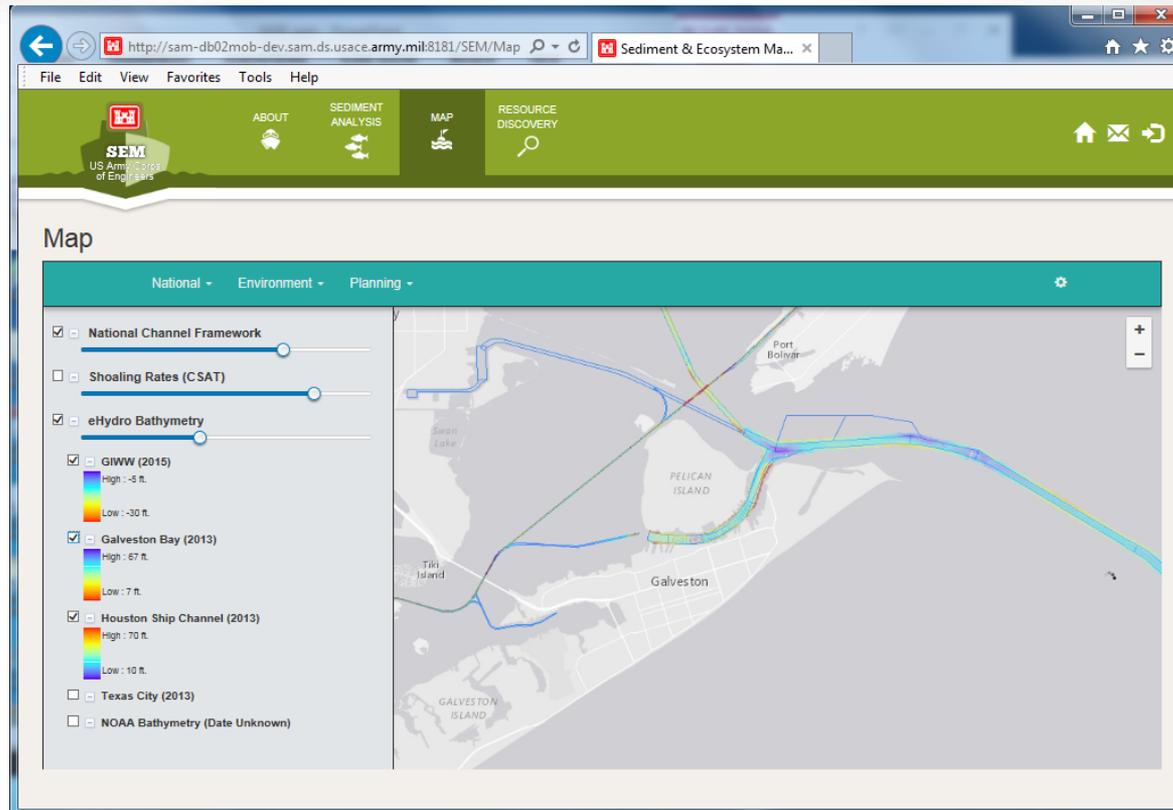


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eHydro Bathymetry

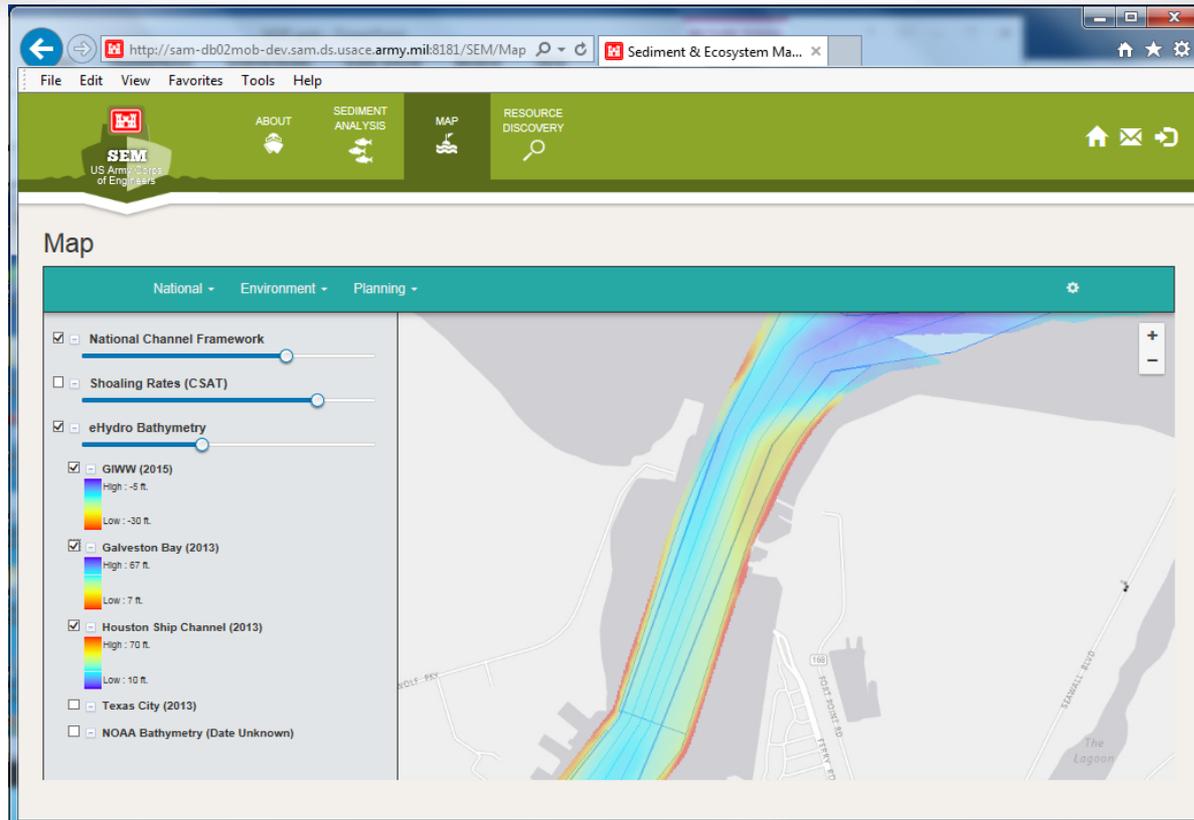


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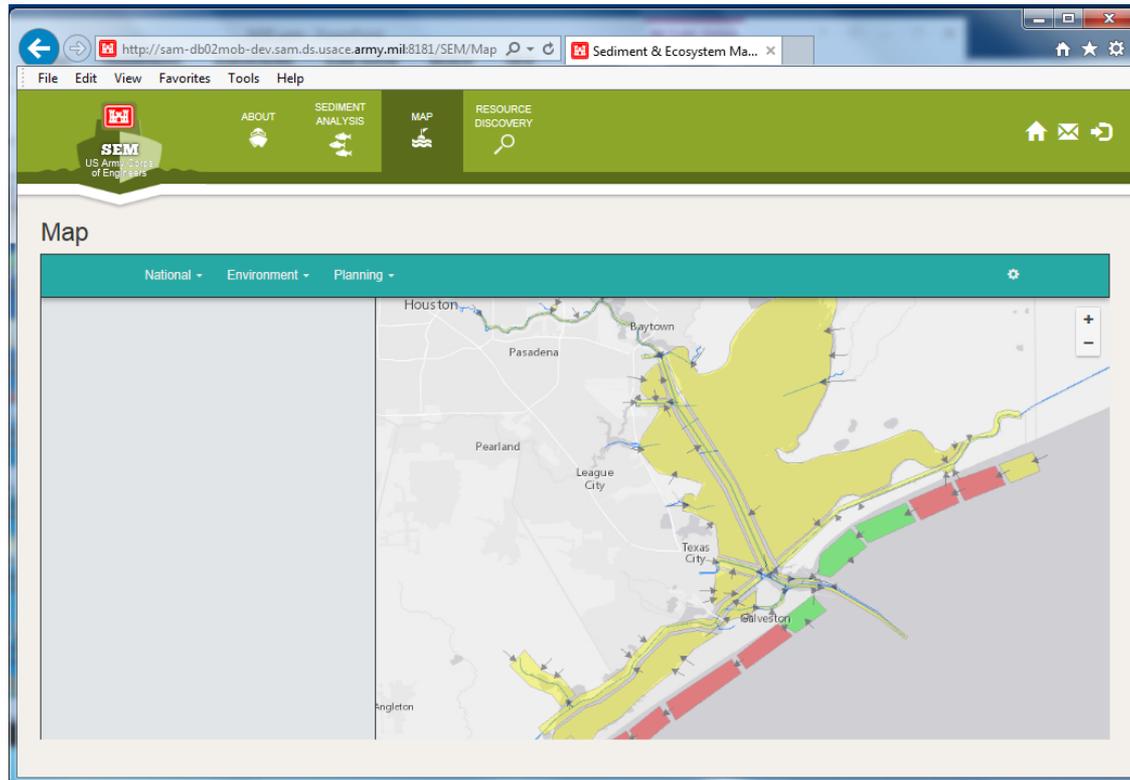


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Sediment Budget



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Take A Ways

- This is an alternative to each office creating the same datasets & tools
- The portal is a Nav community tool everyone can all access
- The Nav DIF can save money, share data-tools-best practices, and save District knowledge
- We need you to participate and use the portal to make it better



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Thank You



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